

The Examiner states that Abraham discloses the claimed plurality of modular core elements.

However, Abraham in fact discloses a system having one coupling at a first location and a second coupling at a second location. See Fig. 6, see also column 6, lines 55-67.

In contrast, claim 57 recites a self-powered powerline sensor having a plurality of modular core elements for disposing about an a.c. powerline.

Abraham does not teach or fairly suggest modular core elements as claimed. Indeed, a single coupling at a first location and a single coupling at a second location does not equate to a sensor having a plurality of modular core elements.

In contrast, the present invention is directed to a self-powered, non-invasive powerline communications system in which the powerline itself acts as the primary winding. A plurality of modular core elements are disposed about the powerline in a non-contacting relationship. A second winding is disposed about each core element and is responsive to communication means such that, through non-contacting transformer action, the winding is reactively coupled to the powerline for transmitting or receiving a signal on the powerline without tapping the powerline.

Abraham teaches two coupling devices, 14 and 22, each at respective locations and physically wired into powerline 12. Abraham, however, does not teach a plurality of modular core elements as claimed by the applicants. Rather, Abraham only teaches a single coupling at one location and a single coupling at a second location. There is no teaching or suggestion of a modular core let alone a plurality of core elements.

Moreover, Abraham does not teach a winding layer energized by the a.c. powerline disposed about each modular core element, as claimed by the applicants, without

tapping the powerline.

Abraham teaches a primary winding 38 hard wired to powerline 12. A secondary winding 40 is powered by +Vcc. See Figs. 7 and 8. Abraham does not teach a self powered sensor.

In stark contrast, the applicants' claimed invention utilizes the powerline as the primary winding (eliminating +Vcc) which energizes the secondary winding about each modular core element. See page 11, line 6 through page 12, line 3.

Thus, unlike the claimed invention, Abraham is not self-powered, but requires +Vcc on a secondary winding while the claimed invention derives its power from the powerline. Moreover, Abraham clearly teaches physically tapping the powerline by hard wiring the device to the powerline as shown in Figs. 4, 6, 6A, 7 and 8.

The applicants' claimed invention recites means for reactively coupling the signal to and from the powerline without tapping the powerline. Abraham clearly does not teach such reactive coupling to the powerline.

The Examiner states that the coupling capacitor network performs this feature. However, it is clearly evident from Figs. 7, 8 and 22 that each coupling network is still hard wired to powerline 12.

Moreover, the Examiner states at page 4, lines 4 and 5 of the Office Action, that Abraham indeed does not disclose coupling the signal the powerline without tapping the powerline.

Thus, the applicants' invention may be placed at any point along a powerline in order to transmit or receive a condition on the powerline because the claimed invention derives its power from the powerline through non-contacting reactive coupling. The applicants' claimed invention never contacts the powerline. Accordingly, the

applicants' invention is not only easily and safely installed by utility workers but may be easily moved to any point along a powerline without interfering with electric service and without risk to the utility worker since no hard connections are required.

As pointed out in the applicants' specification, the reason for having modular core elements is to limit eddy currents induced in the core material. See page 10, lines 2-6 and page 11, lines 1-4. Also, modular core elements reduce the sensor's profile, allowing use on closely spaced lines or where restrictive volume is needed while increasing power extraction. See page 9, lines 9-20.

Accordingly, Abraham does not teach the elements of the claimed invention and therefore the claimed invention cannot be anticipated by Abraham: Abraham does not teach a plurality of modular core elements disposed about an a.c. powerline, a winding layer energized by the powerline disposed about each core element, or means for reactively coupling the signal to the powerline without tapping the powerline.

Therefore, because Abraham does teach hardwiring the coupling to the powerline while also using reactive coupling, Abraham does not teach or fairly suggest the claimed invention and claim 57 is allowable.

Claims 58-67 depend from claim 57, an allowable claim, and are therefore also allowable.

Claims 38-56 and 58-67 stand rejected under 35 USC § 103 as being obvious over Abraham in view of Libove et al.

However, as discussed above, claims 58-67 depend from an allowable claim and are thus allowable.

Claims 38, 54 and 55 recite coupling the communication signals to the powerline without tapping the powerline.

In order for a reference to be invalidating under 35 USC § 103, there must be some teaching or suggestion to modify the reference to arrive at the claimed invention. Indeed, there must be some motivation to modify the reference. However, absent some suggestion or incentive to do so, the fact that the prior art may be modified does not make the modification obvious. In re Fitch, 23 USPQ.2d 1780 (CAFC 1992).

Libove is directed to reactively sensing the current or voltage on a powerline. However, there is no suggestion of coupling communication signals into a powerline.

Moreover, because Abraham hardwires his system to the powerline while still reactively coupling the signal, Abraham teaches away from the combination and indeed from the claimed invention.

Accordingly, there is no motivation to combine the references as suggested by the Examiner as Abraham teaches tapping the powerline 12, despite reactively coupling signals to the tap. In reference to Fig. 9C, to receive signals the transmitter coil must be uncoupled and to transmit signals the reception coil must be uncoupled. See column 13, lines 53-65. Thus not only is there no motivation to not tap the powerline as claimed by the applicants, but there is a clear teaching that the line must be tapped since reception and transmission signals require coupling and uncoupling respective coils. Thus Abraham teaches away from the combination.

Therefore, because there is no motivation to combine the references and more particularly because there is clear teaching not to do so, the applicants' claimed invention is not obvious and is therefore patentable.

Accordingly, claims 38-56 are allowable.

Each of the Examiner's rejections has been addressed or traversed.

Accordingly, it is respectfully submitted that the application is in condition for

allowance. Early and favorable action is respectfully requested.

If for any reason this Response is found to be incomplete, or if at any time it appears that a telephone conference with counsel would help advance prosecution, please telephone the undersigned or his associate, Joseph S. Iandiorio, collect in Waltham, Massachusetts, (781) 890-5678.

Respectfully submitted,



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